

## EMBEDDED HEAT SPREADER BALL GRID ARRAY

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### ABSTRACT

10 A heat slug or spreader is attached directly to a  
surface of the die in a ball grid array (BGA) package.  
The heat spreader roughly conforms to the topological  
profile of the die, underlying substrate, and  
electrical interconnections between the die and the  
substrate, such as bond wires. The outer portion of  
the heat spreader substantially cover the outer portion  
of the substrate, or alternatively, cover only those  
15 portions extending in laterally from the sides of the  
chip and not the corners. An encapsulant completely  
covers the heat spreader and die.

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